

Severe Hypoglycemia in Patients with Diabetes

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Strict glycemic control decreases the incidence and progression of diabetic vascular complications [1]. For this reason, recent guidelines recommend tighter glycemic control in patients with diabetes. However, although HbA1c reached the target range, strict glycemic control resulted in an increase in the rate of severe hypoglycemia [2,3]. In addition, severe hypoglycemia can discourage patients in the efforts to lower their blood glucose to the target range. Thus, severe hypoglycemia is a major barrier to optimizing glycemic control in diabetic patients. Therefore, the prevention of hypoglycemic events and the early detection of patients at high risk for hypoglycemia have important clinical implications in patients with diabetes.

Severe hypoglycemia can be defined as hypoglycemia episodes requiring the assistance of another person to actively administer glucose or hospitalization or medical care in an emergency department [4]. Although the total incidence of severe hypoglycemic episodes reported by different studies varies markedly, hypoglycemic events are generally more frequent in patients with type 1 than type 2 diabetes [5,6]. Hypoglycemia awareness, insulin use, and preservation of beta cell function through counterregulatory hormone response may all contribute to the difference in the incidence of hypoglycemia between type 1 and type 2 diabetes [7]. The incidence of severe hypoglycemia in Korea has increased considerably during the last decade as estimated from severe hypoglycemic episodes occurring in subjects attending emergency rooms and patients treated by emergency medical services [8].

According to previous studies, severe hypoglycemia has several predictive risk factors such as age, duration of diabetes,

duration of insulin treatment, hypoglycemic events occurring in the preceding months, peripheral neuropathy, and, in particular, impaired kidney function [6,9,10].

Ha et al. [11] analyzed the retrospective data, of 320 hypoglycemic patients with type 2 diabetes who had attended an emergency room from January 1, 2006 to December 31, 2009. They found that patients with type 2 diabetes who experienced severe hypoglycemia were elderly, took multiple medications, and had impaired kidney function. Glycemic control was near the goal set by recent guidelines (HbA1c <7.0%), which suggested that strict glucose control may affect the development of severe hypoglycemia. Poor oral intake or a missed meal (73.4%) was the major cause of hypoglycemia. Taken together, if diabetic patients whose blood glucose is strictly controlled complain of poor eating habits, especially in aged or chronic kidney disease patients, health care providers should focus on the cause and seek a solution to the problem more actively in order to prevent the development of severe hypoglycemia.

This paper presents an approach to severe hypoglycemia from the viewpoint of medical cost. As the prevalence of diabetes and the incidence of diabetic complications increases, the associated medical costs will also increase dramatically [12]. Thus, severe hypoglycemia should be considered not only in terms of its physical aspects, but also in terms of its indirect social costs such as increased in medical care expenditures and decreased work productivity. The results of this study suggest that severe hypoglycemia increases healthcare costs.

Compared to earlier studies [5,6], the population of this study was older and had more impaired renal function. In ad-

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dition, there was a possibility that the incidence of severe hypoglycemia was underestimated since the hypoglycemia episodes considered were limited to patients visiting hospitals or seeking emergency care, and nearly 90% of patients were over 60 years old. In addition, since aged patients have many factors that can affect severe hypoglycemia, such as combined medication, impaired kidney and cognitive function, further multivariable analyses are needed to evaluate risk factors for severe hypoglycemia.

In conclusion, the incidence of severe hypoglycemia is steadily increasing in patients with type 2 diabetes, and this increase is associated with direct and indirect socio-economic burdens. Healthcare providers should be aware that these events occur primarily in the elderly and sometimes are accompanied by potentially fatal symptoms like unconsciousness. Nevertheless, hypoglycemia is fully preventable with intensive diabetic education, clinical attention to high-risk patients, and individualization of the glycemic control target.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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